# Evaluation of Adult Salmonid Downstream Passage Through the Sluiceway and Turbines at The Dalles Dam During Late Fall, Winter, and Early Spring

**STUDY CODE: ADS-00-1** Evaluation of adult salmon fallback and steelhead kelt passage at Snake and Columbia River dams

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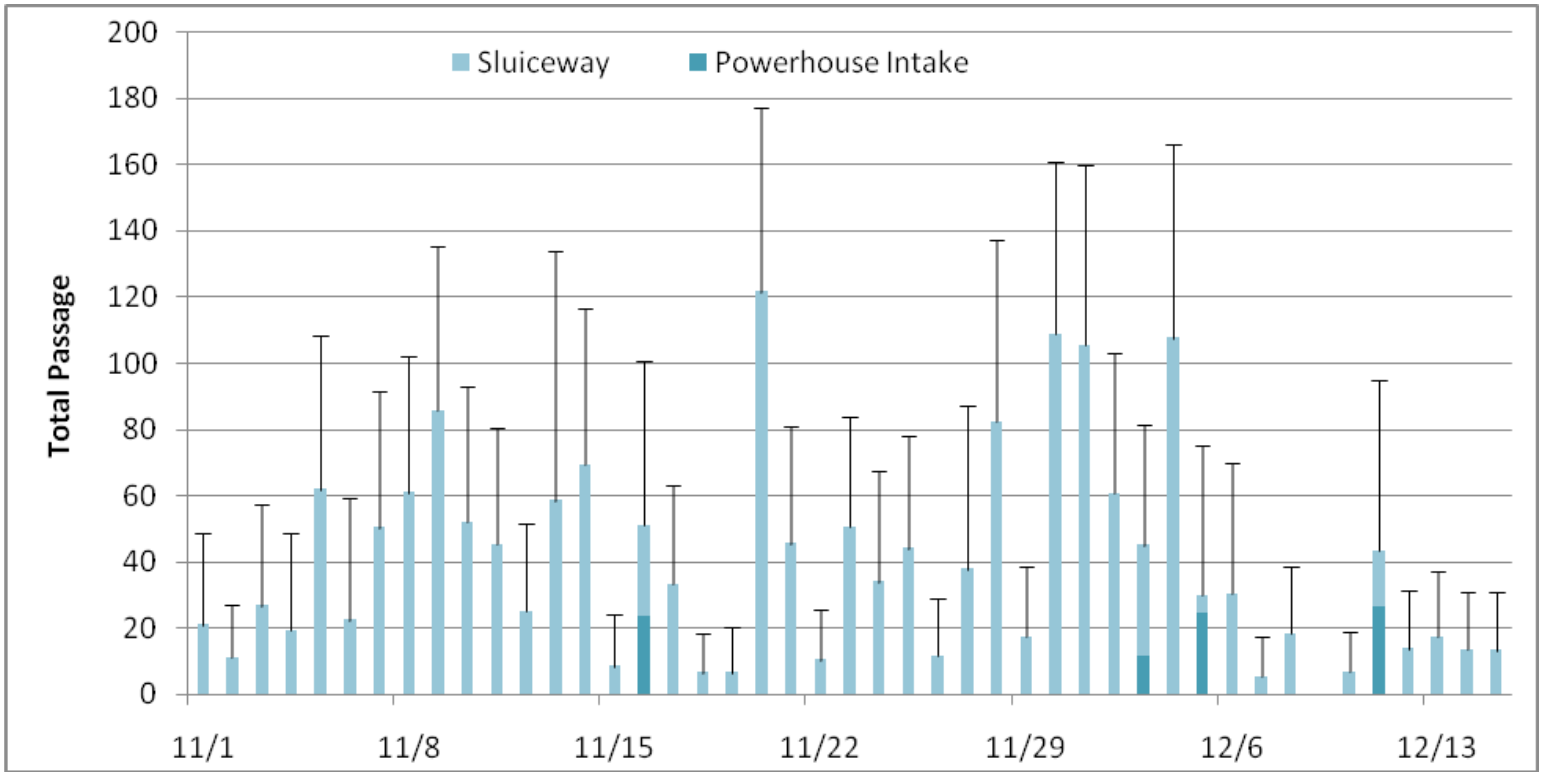
# Issues and Goal

- There are two main operation issues at The Dalles Dam sluiceway during late fall through early spring:
  - Fallback of adult salmon
  - Downstream passage of steelhead kelt
- The goal of this study is to characterize adult salmonid passage rates, spatial and temporal distributions, and behavior at The Dalles Dam turbines and sluiceway to provide management with information to make decisions on sluiceway operations.

# Results – Adult Salmon Fallback

- 1,790 ±250 (95% CI) adult size targets passed the sluiceways and PH intakes from 11/1 – 12/15. Daily average of 40 targets.
- 1,704 passed through the sluiceways (95%) and 86 passed through the PH.
- Run timing peaked in late November.



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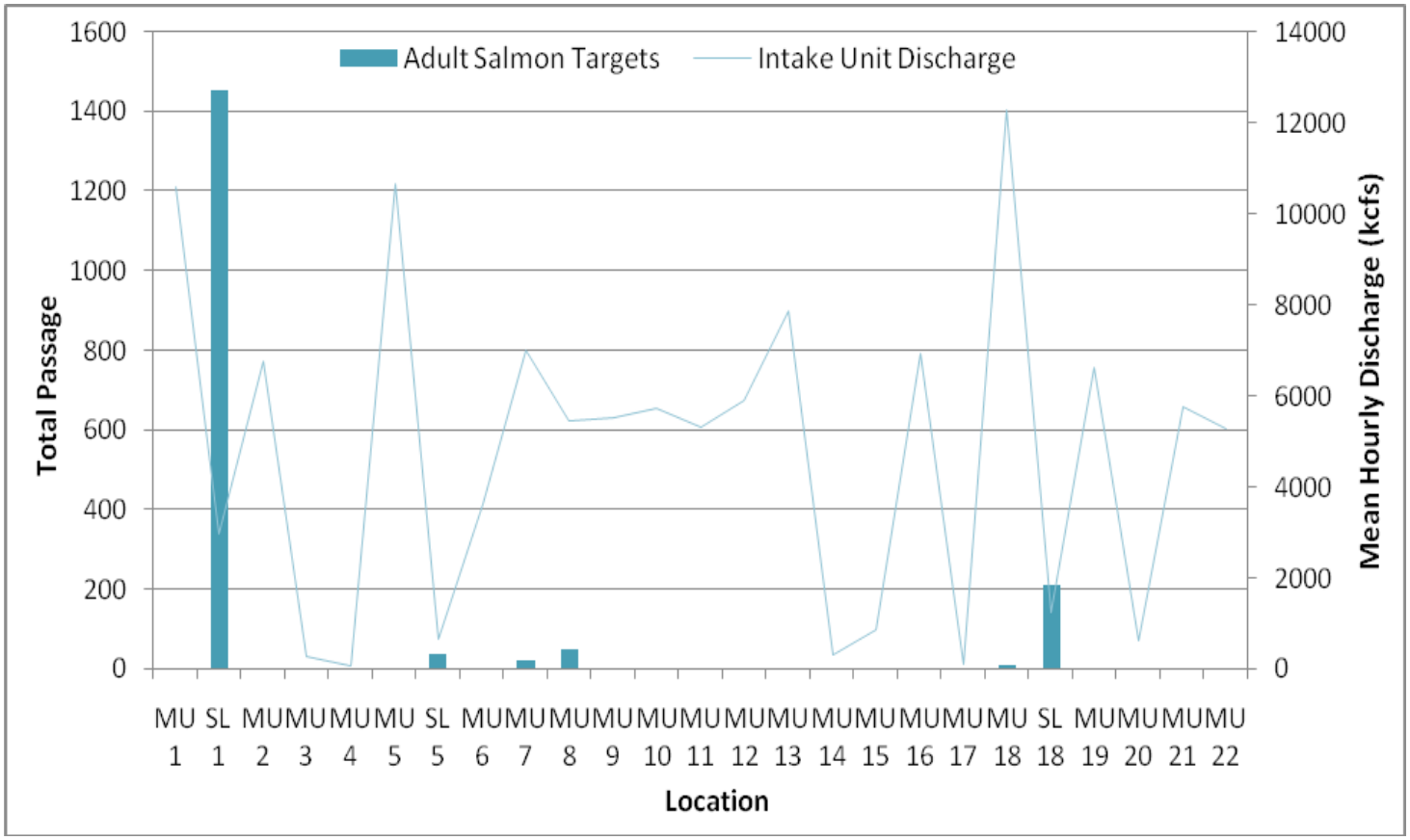
- Total passage was highest at SL 1. SL 18 had the second highest number of fish passing. A small number passed through SL 5 and PH intakes7, 8 and 18.



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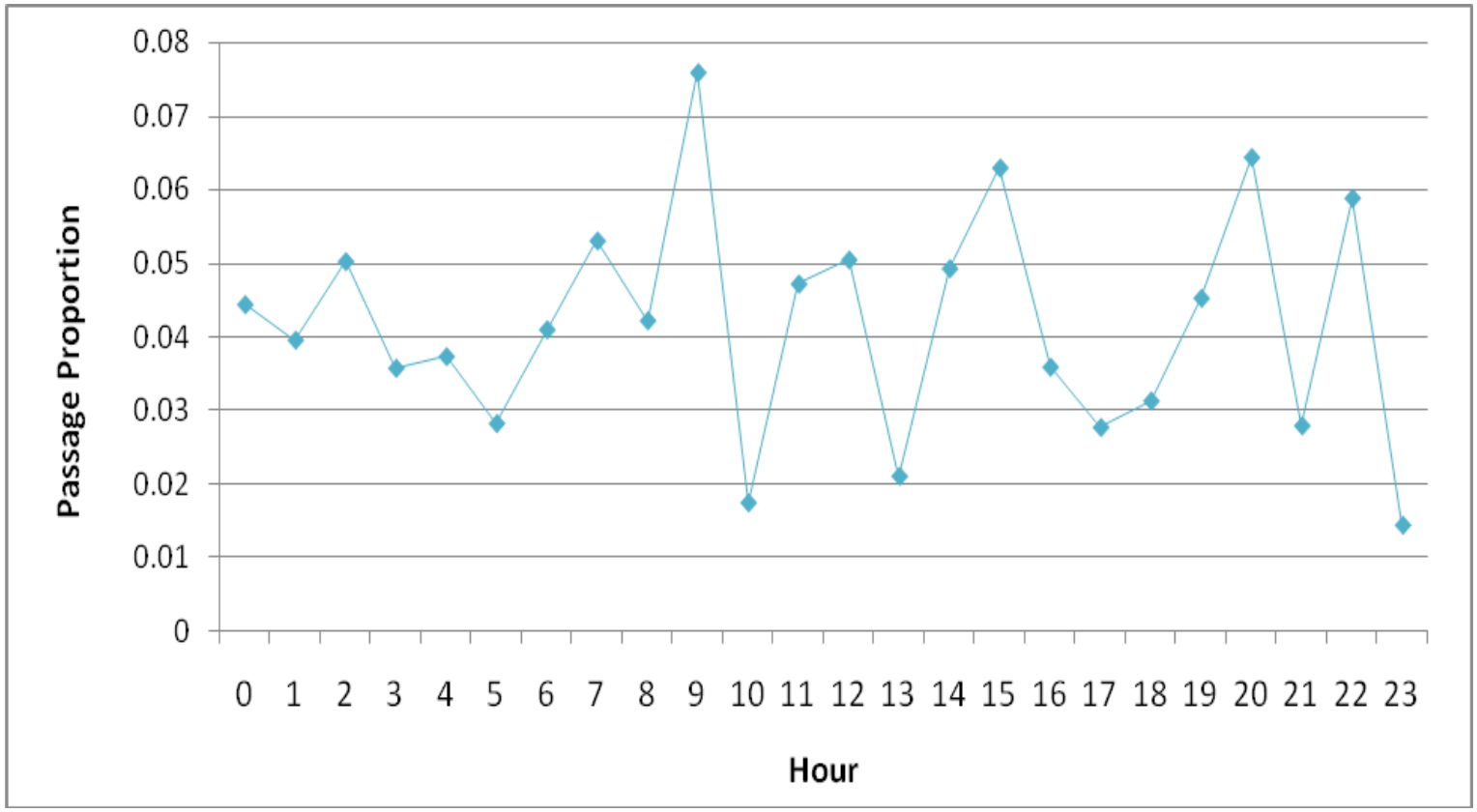
- Fish passage peaked at 0900 h and was lowest at 1000 h and 2300 h.  Passage was also high during mid afternooon hours and nighttime and low during the early morning and late afternoon hours.



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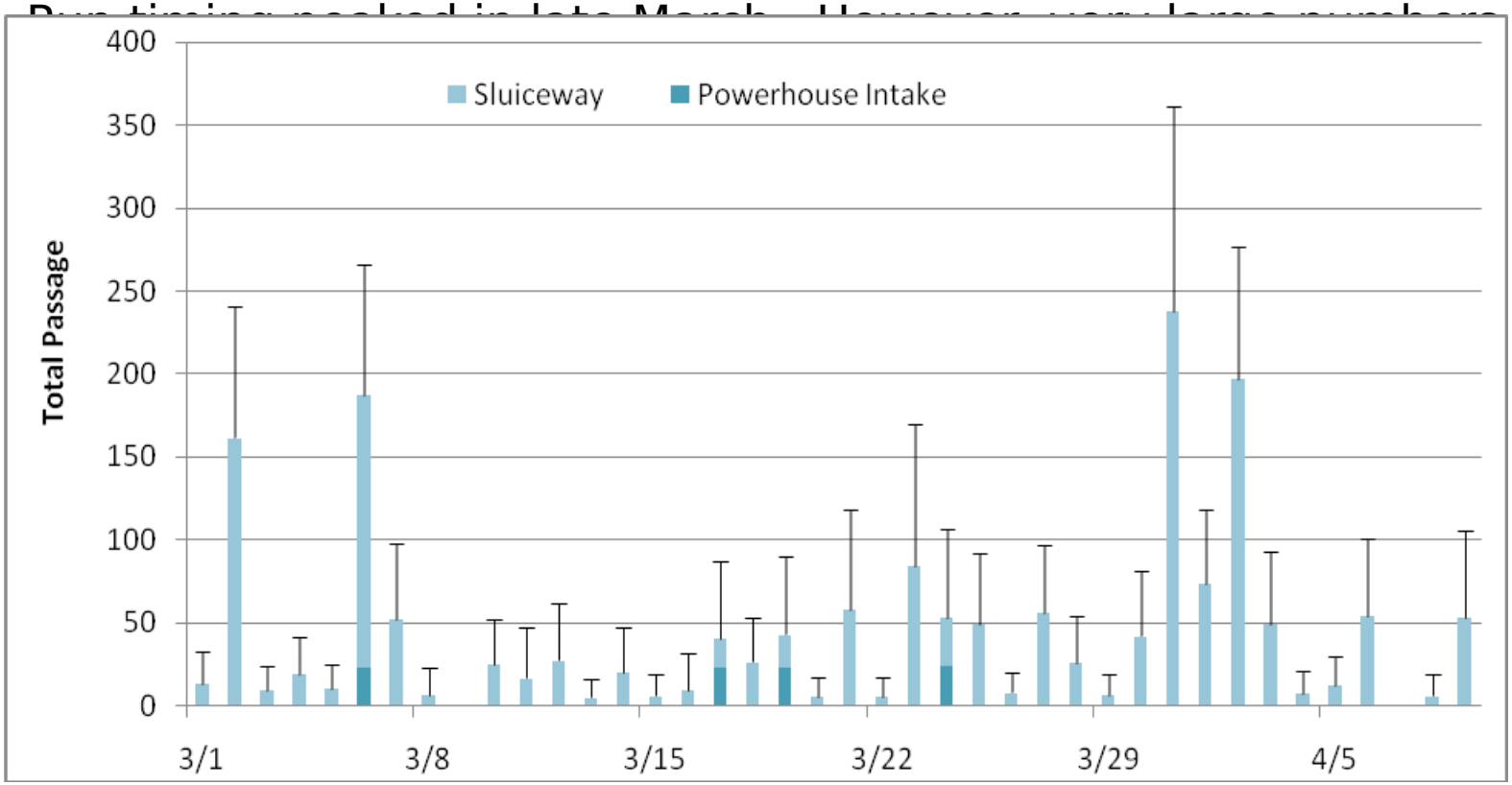
# Results – Steelhead kelt

- 1,766 ±277 (95% CI) steelhead kelt size targets passed the sluiceways and PH intakes from 3/1 – 4/9. Daily average of 44 targets.
- 1,673 passed through the sluiceways (95%) and 93 passed through the PH.
- Run timing peaked in late March. However, very large numbers of



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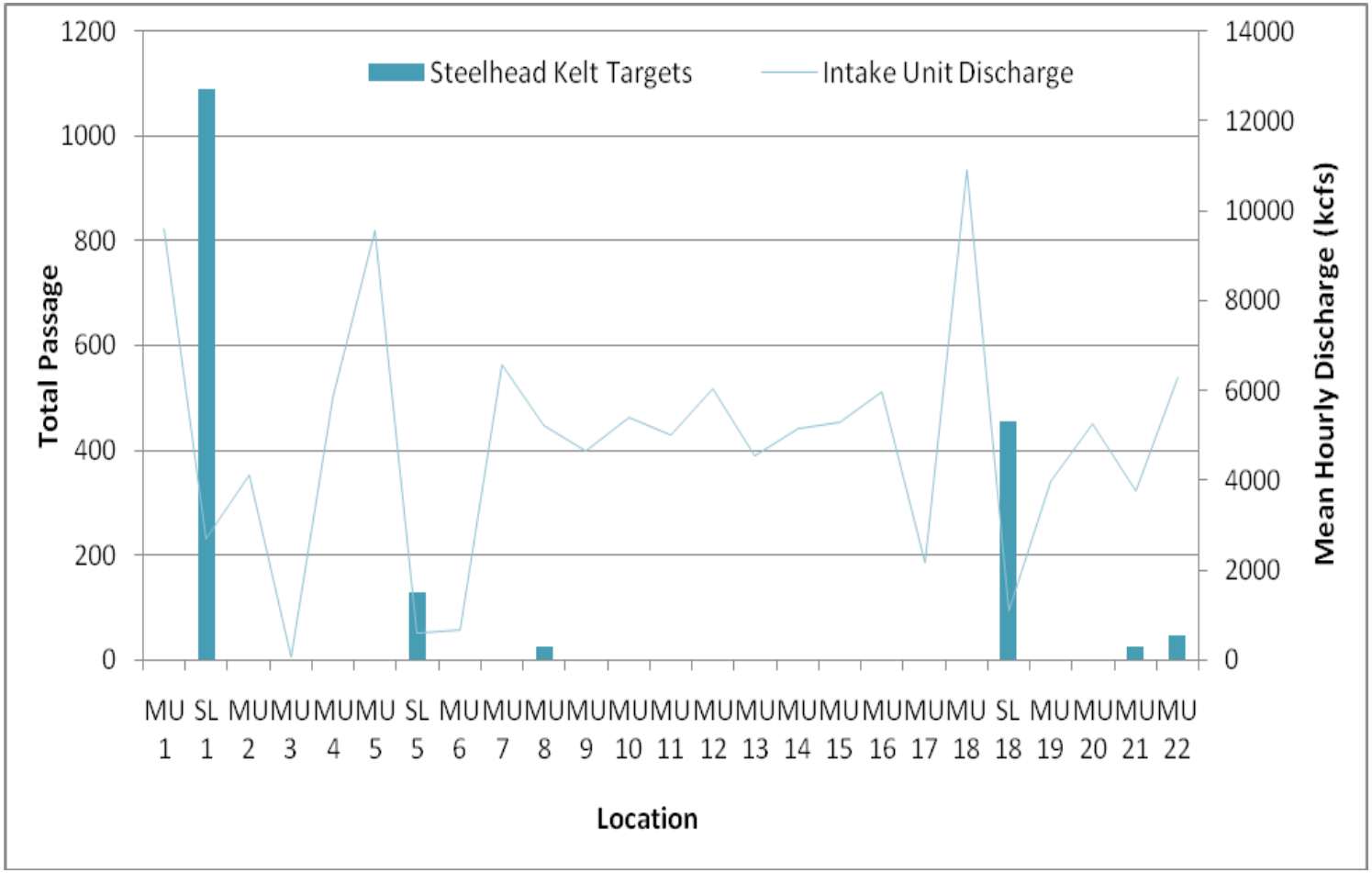
- Total passage was highest at SL 1. SL 18 had the second highest number of fish passing. A small number passed through SL 5 and PH intakes 8, 21 and 22.



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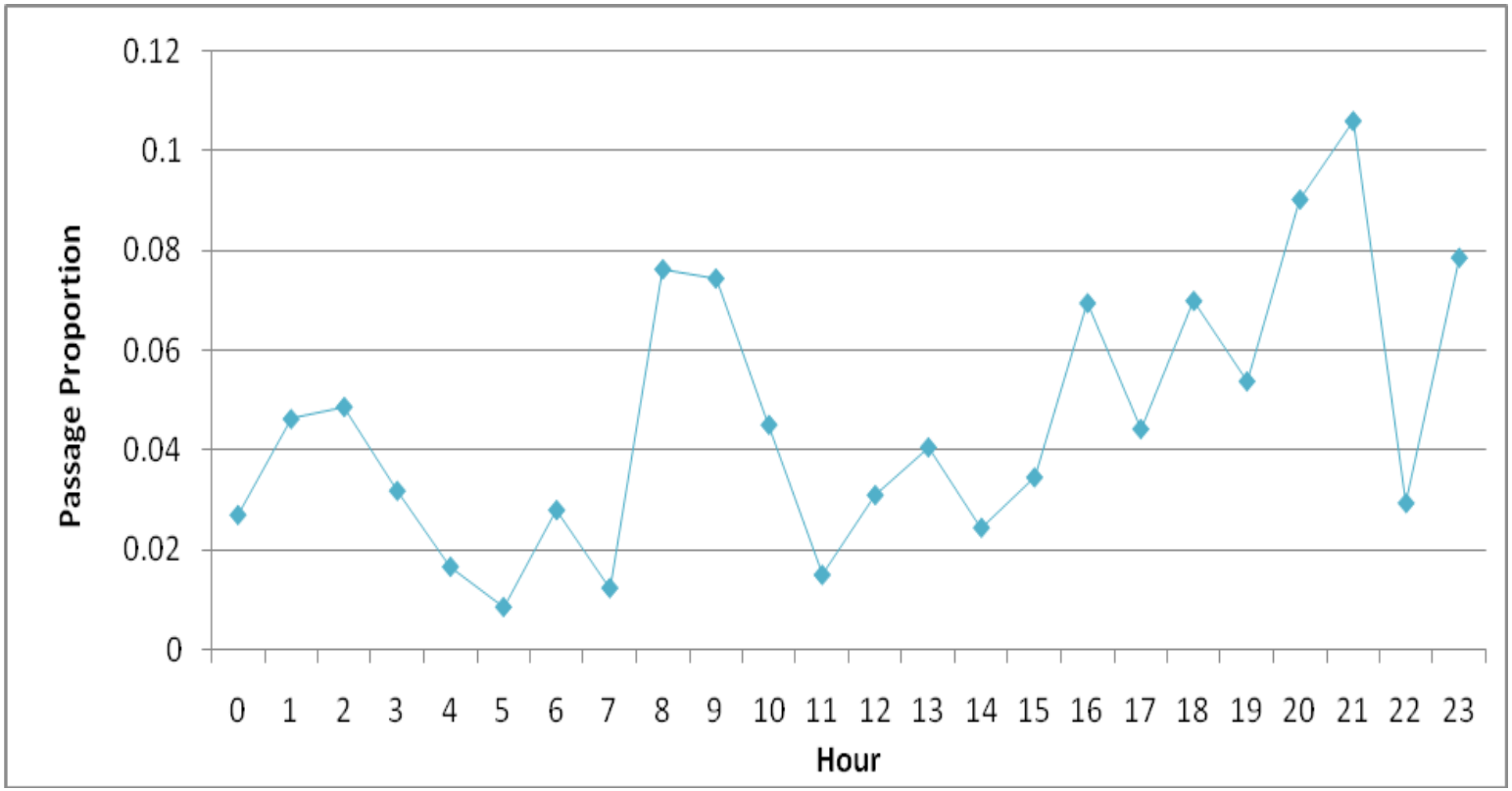
- Fish passage peaked at 2100 h and was lowest in the early morning hours. Passage was also high during mid morning and late afternoon/nighttime hours.



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# Results – DIDSON

- Adult salmonids were oriented into the flow in the sluice nearfield, milling just upstream of the sill, falling back into the sluiceway, or swimming upstream out into the forebay. They also moved along the face of the dam from SL1-2 to SL1-1 and vice versa.
- Juvenile shad were present from the beginning of the sampling period on November 1, 2008 until mid-November.
- Schools of yearling-sized salmonids were observed from late November to the end of the sampling period on December 15. These fish were present in large schools at times and they used the sluiceway to pass downstream.
- Steelhead kelt behavior was typical for salmonids in front of a sluiceway entrance – tail-first orientation downstream, milling, traversing along the face of the dam, moving over the sill and into the sluiceway.
- Some kelt approached SL 1-1 from the west moving around the large pier between SL1-1 and Fish Unit 2-2 and into the sluiceway, or make an abrupt U-turn and swim upstream into the forebay or over to SL 1-2.